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VARIOUS.

How the Ancient Engraved Gems.

A writer in *Harper's Magazine* says —: We must remain as yet some little in doubt as to the methods employed by the old artists to perfect these miracles of taste. We have, however, the absolute certainty that these ancient masters were familiar with the diamond, and that their best work was made by using this, the hardest of all substances, as a tool. A splintered fragment of the diamond served as a scraping tool, and they were well acquainted with the drill. Prehistoric man worked a drill at the very commencement of his existence. A Phœnician gem — a lion attacking a bull — shows how the drill was used. A number of circular depressions are found in the gem, which mark the extremities of the figures. This was done not only for the sake of effect, but to show the artist the limit of his work as to depth. After the holes were sunk, the artist united the various portions of his work by scratching. Now the use of the diamond point or splinter, fixed in a style of iron socket, allowed a certain flexibility of handling which our modern processes of gem-engraving do not permit. To-day the work is done by means of a minute rotating disc of copper, which is whetted with oil and diamond dust. On the least application of the substance to be cut to the disc, it is the disc which bites into the stone. The difference of manipulation is, then, that to-day it is the stone which goes to the tool, and not, as in olden times, the tool to the stone. It is more convenient, then, in 1879, to bring the cart to the horse. It can now be readily understood why, in modern work, time and labour being spared (the art conception not entering for the present into the subject) — why this work of to-day is inferior to the art which is past. It is purely a mechanical process now, for a rotating disc will no more draw lines which have feeling than will photographing processes paint pictures. It has been stated that we are not entirely acquainted with the methods employed by the old glyptic artists. This becomes quite evident from this fact, that their best work seems to have been both cut and polished at one and the same time. To-day we have no tool, no substance which will accomplish this double feat. Mr. King, dwelling on the diamond point, says, "its extensive use is the great distinction between the antique and modern work".

A Useful Cement.

A very effective glue mixture is said to be employed by Turkish artisans in the nice work of attaching diamonds and other jewels to their metal settings. In the production of this substance, the method pursued is to dissolve five or six bits of gum mastic, each of the size of a large pea, in as much spirits of wine as will suffice to render it liquid; in another vessel, as much isinglass — previously softened in water — is dissolved in brandy as will make a two-ounce vial of strong glue, adding two small bits of gum ammoniac, this being rubbed until dissolved. The whole is then mixed with heat, and kept in a vial closely stoppered; when it is to be used, the vial is set in boiling water. This cement resists moisture, and will indissolubly unite two surfaces of polished steel.

The Furniture Gazette.

To Test Glue.

An article of glue which will stand damp atmosphere is a desideratum among mechanics. Few know how to judge of quality, except by the price they pay for it. But price is no criterion; neither is colour, upon which so many depend. Its adhesive and lasting properties depend more upon the material from which it is made, and the method of securing purity in the raw material, for if that is inferior and not well cleansed, the product will have to be unduly charged with alum or some other antiseptic, to make it keep during the drying process. Weathered glue is that which has experienced unfavourable weather while drying, at which time it is rather a delicate substance. To resist damp atmosphere well, it should contain as little saline matter as possible. When buying the article, venture to apply your tongue to it, and if it tastes salt or acid, reject it for anything but the commonest purpose. The same operation will also bring out any bad smell the glue may have. These are simple and ready tests, and are the ones usually

adopted by dealers and large consumers. Another good test is to soak a weighed portion of dry glue in cold water for twenty-four hours, then dry again, and weigh. The nearer it approaches to its original weight the better glue it is, thereby showing its degree of insolubility.

The Furniture Gazette.

Silvering Mirrors.

An improvement in silvering mirrors, by which excellent results are obtained, and which at the same time spares the workmen the danger of exposure to the effect of mercurial vapors, has just been accorded a prize of 2,500 francs by the French Academy. The inventor is M. Lenoir, and his procedure is substantially as follows: The glass is first silvered by means of tartaric acid and ammoniacal nitrate of silver, and then exposed to the action of a weak solution of double cyanide of mercury and potassium. When the mercurial solution has spread uniformly over the surface, fine zinc dust is powdered over it, which promptly reduces the quicksilver, and permits it to form a white and brilliant silver amalgam, adhering strongly to the glass, and which is affirmed to be free from the yellowish tint of ordinary silvered glass, and not easily affected by sulphurous emanations.

Scientific American.

Concert Rooms.

Mr. Cecil J. Saunders, in a paper read at a late session of the Musical Association, in England, on the Construction of Buildings considered in Reference to Sound, made some very interesting statements and advanced some curious theories. Glass being one of the most elastic of sound reflectors, he was not surprised to find, when listening to a concert at the Crystal Palace, that the echo of one note returned to him at the same instant that he received the next note direct. He said that light had a remarkable modifying influence on sound, a statement which was corroborated by gentlemen who took part in the discussion that followed the reading of the paper, although the general opinion seemed to be that the cause lay not in the light itself but in the heat produced by it. Mr. Saunders then described the hall that he would have built to contain five thousand auditors. It would be a square room with rounded corners, and the orchestra in one of the corners. The audience would face the orchestra, and would thus look toward the converging walls. The number of performers provided for would be 700, as this was probably the limit of really good work, the orchestra seats rising tier above tier into the angle of the building. The organ should be chiefly below the orchestra, so as to allow of a low ceiling. By placing the orchestra in the angle of the building, very few of the audience can receive an echoed sound. The seats for the audience should be circular, so as to give every one a direct view. The floor should rise gradually toward the back of the room. The best material for the ceiling is wood. Ordinary plastering is one of the most perfect non-conductors of sound used in building. Zinc would be nearly as cheap, and perhaps even more efficacious than wood. The walls at the back of the orchestra should be covered with looking glass, which has a strong reflecting power for sound. These glasses, however, should not be bedded in flannel as usual, but allowed to vibrate with every note. Boarding or cement would be best for the rest of the walls. Cement is hardly resonant, but it reflects sound well. Stone would do better, but its cost is too great. No doubt a good deal of the resonance of cathedrals is due to the surface of smooth and hard stone inside them. For quartet performances, a movable screen behind the players or singers might be arranged so as to re-enforce the sound in its forward direction. This screen should be of two thicknesses of wood, with a sounding-board at the top inclined slightly upward. Empty and half-empty rooms always echo, so that the best way of avoiding an echo is by low prices and a good programme. When there is a certainty of a small audience in a large hall, heavy curtains should be hung from the ceiling, so as to reduce its size.

Scientific American.